### University Fundamental Statements

<table>
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<tr>
<th>Vision Statement</th>
<th>The Vision of Kenyatta University is to be a dynamic, inclusive and competitive centre of excellence in teaching, learning, research and service to humanity.</th>
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<td>Mission Statement</td>
<td>The Mission of Kenyatta University is to provide quality education and training, promote scholarship, service, innovation and creativity and inculcate moral values for sustainable individual and societal development.</td>
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<td>Identity Statement</td>
<td>Kenyatta University is a community of scholars committed to the generation and dissemination of knowledge and cultivation of wisdom for the welfare of society.</td>
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<td>Core Values</td>
<td>Truth, Creativity, Excellence, Self Reliance, Innovation, Equal Opportunity, Corporate Governance, Institutional Culture, Competitiveness, Academic Freedom and Respect for Diversity</td>
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<td>Philosophy Statement</td>
<td>Sensitivity and responsiveness to societal needs and the right of every person to knowledge.</td>
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This is the 5th issue of the Kenyatta University Research, Innovation and Outreach publication – *The Research and Innovation News!* The overarching goal of this publication is to highlight the research related efforts and notable achievements made by the University Management Board, schools, departments, directorates, members of faculty, students as well as key stakeholders.

The publication covers a wide range topical stories and news including but not limited to funded research and development grants won, dissemination of research findings, community engagements, incubations and innovations as well as visiting scholars.

We congratulate and celebrate all of you for your support, efforts and achievements which are true to the Vision and Mission of Kenyatta University. We remain open to any suggestions and look forward to active participation by scholars, researchers, students and other stakeholders to make this publication an exciting experience.

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**Prof. Vincent Onywera, PhD, ISAK 2**

*Registrar Research, Innovation and Outreach and Editor - in - Chief*
Indoor air contamination in rural households in Kenya

Rural areas in Kenya are usually considered to have clean and healthy air compared to urban areas. This may be true with regard to outdoor air but not indoor air. A significant proportion of rural dwellers lives in soil-walled/floored traditional dwellings and since soils naturally contain terrestrial radionuclides 238U and 232Th, the earthen building materials can be important sources of radon and thoron, radioactive gases in the decay chains of 238U and 232Th respectively. Radon and thoron are carcinogens and according to World Health Organization account for majority of lung-cancer cases among non-smokers. Most rural dwellers do not have access to electricity and resort to kerosene lamps for their lighting needs.

Additionally, cooking and heating is often done using biomass such as wood. Kerosene and biomass produce particulate matter (PM) when burned, and exposure to particulate matter (PM) can lead to health conditions such as respiratory and cardio-vascular disorders. Radon and thoron research in rural Kenya is on-going in the department of physics which is currently collaborating with Hirosaki University, Japan, through Prof. Shinji Tokonami. The department has in the past collaborated with the Helmholtz Zentrum, München, Germany through Dr. Jochen Tschiersch. The goal is to eventually generate a radon-thoron map for Kenya that may be used for reference and in policy formulation. Research on particulate matter (PM) will be starting soon.

Research by:
Dr. Margaret Chege
Department of Physics
New research on Health and well-being of older persons in Kenya has unveiled a standard research tool for routine generation of evidence on the health and well-being of older persons in Kenya and provided case baseline data on health status and determinants for older people. The tool for measuring health and wellbeing among older population in Kenya was validated and piloted in Kiambu County, Kenya. The project is a partnership between the University of Southampton-UK through the Centre for Research on Ageing and Kenyatta University alongside the Ministry of Labour and Social Protection-State Department of Social Protection, Ministry of Health, National Council for Population and Development, Kenya National Bureau of Statistics and Help Age International and Regional office.
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<th>Category</th>
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<td>Person's background</td>
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<td>Marital status &amp; history</td>
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<td>Childbearing &amp; intergenerational relationships</td>
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<td>Work status &amp; Occupational history</td>
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<td>Individual health state</td>
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<td>Lifestyle &amp; health behavior</td>
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<td>Healthcare utilization</td>
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<td>Informal care &amp; support/community engagement</td>
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Health programming for older people has consistently been undermined by a lack of data and vital statistics pertaining to their health status. Consequently, this population is excluded from most general population surveys including demographic health surveys (WHO, 2015). Goal 3 of the Sustainable Development Goals (SDGs) aims to 'ensure healthy lives and promote wellbeing for all at all ages' (UN, 2016) and achievement of successful and healthy ageing (WHO, 2015). The developed and validated tool for assessment of health and wellbeing of older people (HWOPs) in Kenya provides a broad framework for examining disease and disability burden among older people in Kenya; assessing status and determinants of health and wellbeing among older persons while identifying strategies that can enhance the health, psycho-social and general wellbeing of older persons. The study enriches the prospects of health programming and provision for older persons who are especially burdened by non-communicable diseases (NCDs). The project augments current efforts 'Towards Evidence Revolution on Ageing in Kenya' and was funded by the Newton Fund -Institutional Links Grant Call of April 2017.

The tool covers at least 9 life domains that are antecedents and germane to the health and wellbeing of older persons.

The study recommends formulation of a health and ageing policy in Kenya to address unique health realities and needs of older persons; targeting of older persons in health prevention and promotive campaigns within the County while recognizing role of sex and age; an aggressive effort towards prevention of hypertension, diabetes, asthma, depression and dementia which appear to grossly limit life expectancy at 60 and largely affecting women; advocacy change to promote healthy ageing through lifestyle change combined with focused health programming and funding of strategies to promote socio-economic welfare for older persons.

Project coordinated by Dr. Lucy Maina
Department of Sociology
Influence of foot structure and function on performance in physical activity & sports: A collaborative research by KU and Japanese universities

Kenyatta University is involved in a collaborative research project titled “Assessment of Foot Structure and Function in Relation to Selected Health and Performance Related Fitness Attributes among Children and Young Adults”. The project is anchored at the Department of Physical Education, Exercise and Sports Science, in the School of Public Health and Applied Human Sciences, and brings together scholars from Juntendo University (Japan), International Christian University (Japan), and Kenyatta University (Kenya). The main objectives of this project is to explore factors that affect foot structure and function among Kenyan and Japanese children, young adults and athletes, and their potential influence on musculoskeletal injuries and/or performance in physical activity and sports. The project is expected to contribute to better understanding of factors that can lead to enhancing quality of life health and performance which is a priority area for the current governments and United Nations Sustainable Goals.
Dr. Francis Mundia Mwangi of the Department of Physical Education, Exercise and Sports Science is the lead researcher from Kenyatta University, while Dr. Tetsuhiro Kidokoro of the Department of Health & Physical Education, International Christian University in Tokyo, Japan, leads the research from his institution. Prof. Noriyuki Fuku, an Associate Professor at the Graduate School of Health and Sports Science, Juntendo University in Japan is the lead researcher coordinating different aspects of the project from his university. The research is multi-disciplinary in nature, exploring several dimensions associated with the topic, and thus bringing together wide variety of expertise such as human and exercise physiologist, sports biomechanists, psychologists and fashion design experts (dealing with use of high-heeled shoes among slim and plus-size models).

The project has so far covered presentations of related topics in international colloquium and research symposia, as well as training of research assistants on data collection procedures. “I believe this project will improve health and performance outcomes in the study population, and lead to further valuable collaborative initiatives between the institutions and the countries involved”, says Dr. Mundia.
KU Scholar among the top 40 under 40 awardees

Dr. Juliet Makanga of the department of Pharmacology & Clinical Pharmacy was recognized among 39 other achievers under 40 that have made remarkable strides in their respective careers. Dr. Makanga was awarded a PhD in Pharmaceutical Sciences, opening the doors for her to teach and do research in neuropharmacology and stem cell just before she was 30 years. She was awarded the Japanese Government Monbukagakusho: MEXT Scholarship, one of the most coveted foreign government scholarships. Upon completing her first degree in pharmacy, she was awarded another scholarship enabling her to pursue a Master’s degree in Pharmaceutical Sciences at Kanazawa University, with an emphasis in neuropharmacology, which deals with the action of drugs in the brain.

She embarked on her doctorate at Kanazawa University while working as a lecturer and researcher at Ritsumeikan University School of Pharmacy, when she was 25 years old. Dr. Makanga branched out and focused on regenerative medicine and pharmaceutical cell therapy using iPS cells. Regenerative medicine involves pharmaceutical cell therapy products that replace or restore cells and tissues lost to disease such as strokes, liver cirrhosis, Parkinson’s disease or aging. iPS Cells is a new technology created by the Nobel Prize winner Prof. Shinya Yamanaka in 2006. They are able to provide cells to replace damaged cells and tissues in patients.

Dr. Makanga is ardent about bringing regenerative and Induced Pluripotent Stem Cells (iPS Cells) technology home, with a group of researchers from Kenya and abroad she is keen on creating Kenyan iPS cells and investigate the HLA-haplo-type of the Kenya population and set the ball rolling for pharmaceutical cell therapy in Kenya for Kenyans.
Exploring **locally produced** fertilizers, hydroponic nutrients solutions and rooting powders

Kenya relies on imported foliar fertilizers, rooting powders and hydroponic nutrient solutions that are expensive, courtesy of the Vice Chancellor Research Grant Dr. Wilson Thagana of the Department of Agricultural Science and Technology together with Dr. Isaac Mwangi and Dr. Kibe Macharia both of the Department of Chemistry undertook a research project aimed at developing locally customized foliar fertilizer also known as boosters, hydroponic nutrient solutions and rooting powders for sustainable agriculture. Customized foliar fertilizers were tested on maize fields in Tala, Kangundo and Gatundu, also boosters were tested on variety of other crops including potato, amaranths, spinach, kales, pawpaw and coriander while Hydroponic nutrient solutions were tested on cabbages, coriander, spinach and barley. Rooting powders were tested by two international companies on rooted cuttings of various flowers independently. All crops tested benefited from application of the boosters and hydroponic nutrient solution, no ill effect were observed. Feedback obtained from farmers and the companies involved in sampling the products was favorable indicating that the customized rooting powder compared favorably with imported rooting powders in the Kenyan Market. The project team is keen on scaling up the products which will not only avail affordable products that will ease the cost of farming but also create employment along the value chain and contribute to industrialization.
The AHEAD project (African Higher Education Leadership in Advancing Inclusive Innovation for Development) is a three-year Capacity Building project (co-funded by the Erasmus+ programme of the European Union) that aims to enhance the management, governance, teaching, research and evaluation capacities of partner higher education institutions from Kenya, Tanzania and Uganda in view of enabling them to implement the knowledge triangle and better integrate their research, education and innovation functions in support of innovation for sustainable development and inclusive growth. Since the kick-off of the project at the start of 2018 with the inception meeting held at Campobasso, Italy the project has undertaken a number of activities.
1. Analysis of the context for change which sort to analyse

- The National innovation systems in the 3 East African countries (Kenya, Tanzania and Uganda) with the aim of providing a cross national comparison facilitating the espousal of approaches, systems, processes and models that have positively impacted the research and innovation ecosystems in the respective countries

- Institutional innovation systems at the 10 Partner Universities (including Kenyatta University) to inform improvement strategies to be incorporated at the partner universities

2. First Transnational Capacity Building Workshop in Zanzibar, Tanzania

The workshop presented a forum for the representative of the organizations to identify working approaches and important steps for implementing the knowledge triangle in the AHEAD partner country (PC) universities, as well as the requirements for the open educational resources (OERs) and the Resource Pack on Entrepreneurship and Social Entrepreneurship Education. The partnership had the chance to identify the challenges, opportunities and the vital steps in the process of intensifying knowledge flows and linkages between universities and their external environment and to plan the upcoming tasks of engaging stakeholders in innovation for development.

3. Transnational Train the Trainer Event in Birmingham, UK

The training event enhanced the skills of the participants (core trainer team) from the partner institutions by contributing to their knowledge and teaching base in the field of innovation management, inclusive innovation, entrepreneurship and social entrepreneurship. The training sessions highlights included:

- delivery of entrepreneurship teaching/training
- Options of integrating stakeholders into social entrepreneurship education
- Human-centred design, design thinking and social innovation and customer development process
- Teaching methods that engage entrepreneurship students
- Measuring the impact of the entrepreneurship education
- Open innovation and knowledge transfer exploiting innovations
- Inclusive innovations (its characteristics, impact and difference from commercial innovation) as well as policies in support of it
- Challenges in building an ecosystem for inclusive innovation and managing grassroots involvement in innovation;
- Various case studies of best practices for delivering inclusive innovation and entrepreneurship education were shared by the European partners.

The core teams from the partner universities will be expected to prepare faculty members and researchers to teach/train in the area of innovation management and inclusive innovation. The project next main activity is the finalization of the open education resources and resource pack on entrepreneurship education which will be reviewed and tested prior to roll out.
The Southern African Research and Innovation Management Association (SARIMA) held a 5-day research management workshop at the Nairobi Safari Club Nairobi, Kenya from 1-5 July 2019. This was a capacity building workshop funded through the BRECcIA Project which is a four year RCUK Global Challenges Research Fund (GCRF) program which aims to develop research capacity across institutions that is self-sustaining and focused on improving food and water security for the poorest of society. The program’s vision is to strengthen research capacity and capabilities in institutions in Malawi, Kenya and Ghana to carry out impactful research that leads to positive policy and practice change for sustainable water and food security, which will have benefits for the 270 million people living in the Sub Saharan Africa drylands.

The Research Management Training, one of a series of trainings set to take place, was facilitated by Dr. Yolanda Davids, Assistant Director, Research, Witwatersrand University, South Africa.

The workshop brought together representatives from the participating BRECcIA institutions in Kenya which included; University of Nairobi UoN, Masinde Muliro University (MMUST), Technical University of Kenya (TUK), who were the hosting university, as well as Kenyatta University (KU).

The workshop focused on fundamentals of research management, managing the research process-applications, reviews, evaluations including grants and fundraising, research financial management and managing research for impact.

The BRECcIA project is a collaboration of the Southampton University in UK, six universities in three countries (Kenya, Ghana and Malawi) in Africa and three regional research centres. SARIMA on the other hand has been engaged to contribute to the enhancement and support of research management institutional capacity building of the BRECcIA collaborating partners.
Kenyatta University management is keen to ensure excellent capacity to conduct high quality, impactful research by staff and postgraduate students. Under a collaborative project between KU and the University of Helsinki, Finland, 140 staff and students were trained in four courses conducted in May 2019 to enhance research skills. The courses were facilitated by Prof. Mikael Fogelholm and Dr. Noora Kanerva both from University of Helsinki, Finland supported by the KENFIN-EDURA project. The month long trainings covered core skills areas in data handling and analysis, scientific writing and communication and linking nutrition and health agenda to the SDGs. The content and achievement from each course is highlighted:

The university appreciates the training facilitators and the collaboration with the University of Helsinki, Finland, the KENFIN EDURA project and all staff and students who successfully participated in the trainings. The training was carried out as part of the KU research capacity building strategy in the Division of Research, Innovation and Outreach and coordinated by the Directorate of Research Support and Dissemination. Notably, demand for all the courses was far higher than the space available. The university is committed to capacity building and has in place a plan to ensure continued availability of similar opportunities.
The importance and benefits of collaboration by universities with industry and government have been recognized since the 1st industrial revolution and the increasingly closer collaboration and co-creation has led to the 2nd, 3rd and 4th industrial revolutions. Universities and research institutions in the industrialized countries have forged a working relationship with industry and government that has continued to spur economic growth and technological advancement in these countries. The universities have, as a result, become financially and programmatically stronger and sustainable. Unfortunately, the same cannot be said for universities in the less economically developed world. Collaboration by universities in low-income countries with industry and government organizations is not a rule but an exception, they are still largely ivory towers disconnected from the practical concerns of the society.

Getting our Schools and Departments to work closely with industry and government has obvious advantages to the University, Country, industry and society. The University is certain to benefit from constructive inputs from industry into training programs, the churning out of quality and relevant graduates and flow of funds in support of commissioned research, to name a few. Industry, on the other hand, will have the benefit of identifying research that might be useful for the design and development of innovative processes and products leading to patents co-owned. Industry-sponsored university research is often developed into practical applications that generally benefit society, for example, M-Pesa, cell-phone, chapatti maker, ugali maker. Ultimately, the country is the biggest beneficiary of the output and outcome of collaboration, financially stable universities, increasing economic growth and an impactful tertiary education system.

The Division of Research initiated the establishment of standing collaboration committee for each school, department and directorate and the committees have been taken through capacity building workshops for thorough sensitization prior to commencing work.
Technology and innovation support centre established at KU

The University management understands that scientific discoveries and technical advances provide countries with unparalleled opportunities for economic growth and improved social well-being. This rapid increase in new scientific and technological knowledge only provides economic and social benefits when it is effectively exploited and leads to innovation and entrepreneurship opportunities as has been demonstrated by the activities in Kenyatta University. In Kenya, public expectations from technological innovation are evolving in line with social concerns including youth unemployment, sustainable development, aging populations among others, the innovation process itself is undergoing profound changes.

Kenyatta University in collaboration with Kenya Industrial Property Institute (KIPI) launched the Technology and Innovation Support Centre that will aid the innovation process in the following three ways:

1. Strengthening the institutional capacity to offer a variety of IP services to its clients including patent searches, patent drafting and assistance in prosecution of IP applications.
2. Increasing accessibility by Kenyatta University to technological information contained in patent and other technological information.
3. Increasing innovative and inventive outputs manifested by increased patent filing by or through Kenyatta University.

The University is keen on strengthening its capacity for effective Intellectual Property (IP) management especially for those that arise out of research and projects conducted by its students and faculty. IP management has become a critical component of the Higher Education sector in Kenya. A five-day intensive specialized training on Patent Drafting was conducted by experts from the Kenya Industrial Property Institute (KIPI) from 18th to 22nd March 2019. The aim of this training was to increase the pool of patent drafters by discipline in Kenyatta University.
The future handcart

The Kenya National Innovation Agency has continued to support innovators towards product development and commercialization through grants. The agency has recently supported seven innovators through the Centre in a bid to reach commercialization. Amongst those innovators who received the support is Mr. Kenneth Guantai the proprietor of Auto-Track East Africa who has received a grant award for product development and commercialization. Auto-Track was set up to research and manufacture green technology mobility products for the vast and untapped African market. The drive behind the innovation is to reverse pollution that results from fossil fuel combustion by the conventional motor vehicles plying urban roads in Kenya on daily basis.

The innovation encompasses a unique model of an electric light duty three wheeler (Elo- cabs) and an electric handcart (Elo-carts) for use in light goods transportation and taxi services in major cities and towns across Kenya with the possibility of up-scaling to other regions of Sub-Saharan Africa and beyond. Mr. Guatai is also at an advanced stage of developing a utility component that will enable his three-wheelers and handcarts to be self-recharging with very little motion that will be known as Regenerative Motion Recharging System (RMRS), a technology that will enable EVs self-recharge through kinetic motion and will completely eliminate the need for external power source as fuel or electricity plug-in for operation.

Auto-track E.A is targeting small business owners (vendors) who need to transport small wares from one point to another, industry wares and taxi operators within the city. “Our electric handcart is ideal for transportation of farmer produce to the market and factory goods from and to warehouses and for collection of garbage and other material wastes in estates to central collection points among others”. The innovation has been duly registered and patented and also received all approvals from the government giving a go ahead for the manufacture of the product. Kenneth has developed and tested several prototypes of the line products which have yielded good results that have given him the confidence of rolling off the products under mass production for commercialization.
Dr. AnneCarol Karanja, is the lead innovator behind Eco Hub solution currently being hosted at the Chandaria Business Innovation & Incubation Centre. Dr. Karanja of the department of Biochemistry, Microbiology and Biotechnology is currently working towards product development and commercialization after winning an award from the Kenya National Innovation Agency towards support of the innovation. Ecohub Solutions focuses on the use of innovative products for sustainable environmental protection. It makes biodigesters for use in septic tanks and pit latrines among others products for waste management with the aim of maintaining a clean and safe environment. The products are efficient, affordable, user friendly and ecologically sustainable.

Resistance to degradation necessitates the use of expensive exhausters to empty septic tanks and pit latrines. Chemicals mostly used in waste management have side effects on users and other organisms. Generally, the methods commonly applied in getting rid of waste contribute to climate change. This intervention is therefore very necessary in safe guarding our environment and biodiversity from harmful effects of poor waste handling.

The innovation consists of microbial products that address issues related to waste disposal. The products help in speeding up degradation of waste without harming the environment and biological diversity. Organic materials normally resist natural degradation leading to public health and economic challenges among other issues.
RESEARCH AND DEVELOPMENT GRANTS
Prof. Judith Kimiywe of the department of Foods Nutrition and Dietetics has been awarded a grant of Euro 279,926 by the Flemish Interuniversity Council (VLIR) to carry out a collaborative research titled Insects for Nutrition and Health: Development and Evaluation of Insect-based Complementary Foods for Children in Kenya.

The project which is being undertaken in collaboration with Ghent University in Belgium and University of Nairobi aims to strengthen research and education capacity as a means of generating and exchanging knowledge and contributing to the fight against poverty.

This project seeks to address the issues surrounding undernutrition and sustainability of protein diets and possible avenues to explore edible insects as an alternative strategy to attaining nutrition.

Additionally, the project will also seek to augment the idea of insect nutrition by researching on nutritional values, safety and socio economic issues surrounding insect nutrition. These complementary foods are to be developed using palatable insect species combined with germinated cereals, vegetables, root tubers and fruits.

The project is will run for 5 years and will support one PhD and 8 Masters students in their research work.

Expanding the food basket: **Edible insects as an alternative**
Dr. Eunice Githae of the department of Psychology has won a research grant of USD 20,000 from the World Anti-Doping Agency (WADA) for the project titled Gender outcomes in using Brief Motivational Interventions (BMIs) on Shaping Beliefs and Attitudes towards Doping for Athletes in Secondary Schools.

The research seeks to explore gender disparity in psychological factors that influence choices in use, or lack of use, of performance enhancing drugs among athletes in Kenya; strengthen skills that build resiliency in anti-doping decision making among youth; capacity build game teachers and the school community members in the integration of anti-doping education during games training programmes as well as develop an evidence-based and contextually sensitive model for school-based anti-doping education intervention.

The approach used will entail utilizing athlete-centered techniques in prevention of doping this will facilitate evidence-based research which will further inform policy and future interventions.
Dr. Ezekiel Mugendi, Department of Biochemistry, Microbiology and Biotechnology

The 2019 Flair Scheme funded 23 scientists from a competitive pool of over 700 applicants. Dr. Ezekiel Njeru Mugendi of the Department of Biochemistry, Microbiology and Biotechnology was among the 1st cohort of the 23 scientists who shared the £25 Million awarded by the scheme. We get an insight from Dr. Mugendi into his plans as he embarks on his 2-year FLAIR research fellowship.
Q1. Hearty congratulations for this mean feat, 700 applicants and you were among the successful. Share with us your experience in terms of writing the FLAIR application; submitting process, what did you do right?

It was a rigorous process but immediately after the Division of Research shared the call I embarked on it, so one needs to unpack the call they intend to respond to early enough to get to know what is required, assemble supporting documents in good time to avoid the last minute rush, set aside good time to develop your proposal or fill your application as opposed to doing it in a hurry.

Q2. What is your project about and who are the project partners?

My research is focused on optimizing the use of beneficial plant-associated microorganisms to sustainably promote food production and resilience of smallholder agroecosystems to climate change drivers. I plan to exploit the local diversity of beneficial microorganisms by determining their efficiency in delivery of multiple agroecosystem services. Through participatory research, I will create more awareness of economical and sustainable agronomic management practices that integrate beneficial microorganisms to smallholder farms. This is an individual fellowship with no partners, However a mentor and collaborator will be selected by the Africa Academy of Sciences and The Royal Society at some later stage.

Q3. What is your plan of action with regard to implementing the project successfully? And how do you intend to influence upcoming researchers.

A polyphasic approach including morphological, biochemical and molecular methods will be used to identify and map the biodiversity patterns of the native root-associated microorganisms. The isolates will be screened for production of beneficial plant growth metabolites in vitro. Effective native isolates that promote crop production, drought tolerance and quality will be identified using greenhouse bioassays, multiplied and supplied to smallholder farmers. Furthermore, field experiments will be established and used for on-farm assessment of prepared low-cost microbial inocula. I plan to initiate a state-of-the-art laboratory in environmental microbiology which will in a great way influence our upcoming researchers.

Q4. How does the project relate to the BIG FOUR AGENDA?

The proposed project focuses on increasing food security in the country under changing climatic conditions through sustainable use of beneficial root associated microorganisms. With this, we will benefit the local community through shared knowledge, enhanced stakeholder outreach and use of more sustainable, affordable and environmental friendly strategies to boost food security.

Q5. What are the expected outputs, outcomes of the project?

Effective native isolates that promote crop production and resilience will be screened using greenhouse bioassays, multiplied in vitro and supplied to smallholder farmers. In situ biodiversity 'hot spots' will be established through participatory research and used for on-farm multiplication and conservation of the native microbial isolates. In capacity development, the project will train a number of extension officers and postgraduate students.
Q6. What is the impact of this award to you as the researcher, to the university and to the community?

The FLAIR Fellowship gives me a platform to further my career aspirations, develop more research skills and collaborations and contribute to capacity development in Kenyatta University. The overall objective is to develop innovative and sustainable soil amendments strategies integrated with management practices to improve the performance, quality, sustainability and resilience of crops cultivated by smallholders in semi-arid tropics of Kenya. This is particularly useful as it will boost food production in areas that are often prone to drought and food scarcity. Moreover, sustainable and affordable strategies of increasing agricultural productivity and cash generation by smallholders in extremely resource limited and marginalized areas will be developed. The involvement of different stakeholders in this project including farmers and local scientists will contribute significantly to a better understanding and development of resilient cropping systems in semi-arid zones of Kenya and beyond.

Q7. Any advice to researchers seeking future Flair opportunities as well as other grants?

Prepare quality proposals, which are innovative and product oriented.
Dr. Lucy Kiruri, Lecturer of Physical & Computational chemistry in the department of Chemistry, received a mini-grant of $15,000 from Kenya Education Network (KENET) in support of her research project titled, “Binding of Heavy Metals Cations – Ethylenediamine Maize Tassel Complexes: Insights from the Density Functional Theory – Molecular Dynamics (DFT-MD).” Dr. Kiruri partnered with Dr. Isaac Waweru and Dr. Joan Oguina of the department Chemistry at Kenyatta University and University of Embu respectively whom are both experts in Physical and Analytical chemistry with research interests in water sanitation and water purification technologies.

The one year mini-grant is geared toward the use of biosorption technology to remove heavy metals from water, which has become a critical threat to human health and environment. Considering both environmental and economic factors, removal of heavy metals from water is an important issue if the country is to achieve its Vision 2030. Biosorption has widely been studied as a technology for water purification due to its efficiency, cost-effectiveness, reduction in the quantity of biological sludge and the ability to regenerate the biosorbent. The study will be carried out using ab initio and molecular dynamics approach to gain better insights into biosorption-related processes.
Using iBeacons to Track the Distribution of Fertilizer

Muthoni Nganga of the department of applied economics secured a grant from the Center for Effective Global Action (CEGA) in collaboration with partners from the University of California, Berkeley (Prof. Daniel N. Posner and PhD Student Jennifer Hamilton). The collaborative project will seek to explore the use of iBeacon technology for tracking the distribution of fertilizer in small communities in rural Kenya. The team will embed iBeacons into 10 kg bags of fertilizer, which will then be distributed to village leaders approximately one month before the onset of planting. The village leaders will be instructed to distribute the fertilizer to the neediest farmers in their village. The team will use the iBeacon technology to track the location of tagged bags across the households in the village.

Tracking will be accomplished by having a local enumerator equipped with a reader device complete a prespecified walking route designed to pass within 20 meters (the maximum dependable signal distance of the iBeacons) of each household in the village. Tracking will occur every fourth day between the distribution of the fertilizer and planting. Misallocation of the fertilizer will be inferred by comparing the households in which the tagged bags are detected during the monitoring period with an independently gathered list of the neediest households. The quantity of interest to be evaluated is the extent to which fertilizer is ‘leaked’ (does not end up in the households of intended recipients). The project will serve as a valuable test of the viability of the iBeacon technology as a measurement tool for future evaluations intended to generate policy-relevant lessons about the types of interventions or modes of distribution that have the greatest effects on improving targeting.
VISITING SCHOLARS
My research focuses on who is admitted to the university and who stays to graduation especially for low-income students. In the past, all my research has focused on American students, and this project in Kenya is my first comparative study. While at Kenyatta University and another private university in Kenya, I interviewed undergraduates about their student experience focusing particularly on how they pay for their education. My interest is determining the difference, if any, between government-sponsored students and self-supporting students. Across the globe, governmental support for higher education has dwindled forcing the burden to pay for education on students and their families. I spent a wonderful month with the support of the educational foundations department at Kenyatta and hope to return for future collaborations with faculty there.
Prof. Mikael Fogelholm

Prof. Fogelholm has been a Professor in Public Health Nutrition at the University of Helsinki since 2011. He has 198 original research publications and reviews listed in PubMed. His main research interest is the interactions between dietary patterns, physical activity and obesity. His largest project right now is related to use of loyalty-card food-purchase data in assessment of dietary habits in the population, and to nutrition transition and prevention of non-communicable diseases in Kenya. Besides active research, Mikael is the head of the Master’s Program in Human Nutrition and Food-related Behaviour at the University of Helsinki. When not working, he usually goes out mountain biking or alternatively plays the piano.

Dr. Noora Kanerva

Dr. Kanerva is the Finnish coordinator of the KENFIN-EDURA project. She holds a PhD in public health and a docentship in nutrition epidemiology from the University of Helsinki. Dr. Kanerva did her postdoctoral training in the Swedish Obese Subjects study group at the University of Gothenburg, Sweden, and in the Helsinki Health Study group at the University of Helsinki. Dr. Kanerva has in total over 30 publications and she was rewarded as the Young Epidemiologist of the Year from the Finnish Epidemiology Society in 2014. The main theme of her research has been associations between diet, lifestyle and obesity. She has explored this theme with a wide scope reaching from metabolic risk factors to sickness absence. Dr. Kanerva has supervised several MSc and PhD students as well as organized courses and given lectures in nutrition and in public health.
Under the collaborative project (KENFIN-EDURA) between Kenyatta University and the University of Helsinki, Finland Prof. Mikael Fogelholm and Dr. Noora Kanerva visited KU in the month of May during which they facilitated 4 capacity building training workshops that were valuable to both members of staff and students. The workshops were on:

- Science communication: poster and oral presentation which aimed at providing the participants with basic skills that a researcher requires to be able to communicate their work through scientific writing, presentation and communication of research in scientific congresses, conferences and seminars

- Scientific writing for international journal - the course provided participants with the basic writing and publishing skills needed for international journals which could also be applied to writing Master’s and PhD theses, and research proposals and plans

- R-Statistical software course - R is a programming language and free software environment for statistical computing and graphics widely used among statisticians and data miners for developing statistical software and data analysis. The course sort to provide the participants with the very basic skills to get started with using R: where to get it; how to make basic commands and writing scripts; downloading packages; where to find help and tutorials for self-learning

- Sustainability & health promotion form global view to local solutions – the course emphasized on placing health behaviour and promotion in Kenya into a global context, and to reflect the local solutions from a wider view. The health behaviour focus was on diet and physical activity, with non-communicable diseases (NCD’s) as the main health outcome focus
The ACEITLMS staff exchange programme

Prof. John Aluko Orodho participated in the prestigious African Center for Excellence in Innovative Teaching and Learning of Mathematics and Science (ACEITLMS) Staff Exchange Programme from 9th to 23rd May 2019. The ACEITLMS, a regional Center based at Rwanda University -College of Education aims at strengthening human capacity to deliver research-based quality teaching and learning of Mathematics and Science in Rwanda and across the region, in collaboration with regional and international partner’s institutions.

Prof. Orodho was involved in assisting doctoral students prepare proposals that are responsive to current innovative competency-based curriculum that gravitate around the 21st century learning geared towards making learning more personalized and connected to learners passion, builds upon their strengths and skills, empowers them with the tools that they require to derive change and ultimately recognize that different learners face different challenges and might need different levels of support. The proposals focused themes that will equip them with the skills they need to thrive in an increasingly demanding and uncertain job market and therefore facilitate effective teaching and learning at all levels of education.

The staff exchange programme enables scholars from the African continent to come together and devise strategies for involving their policy-makers in ensuring that the research activities and findings aim at bridging the current knowledge praxis gulf in educational policy and practice. These activities are all aimed at creating critical mass of well-trained teachers and educational practitioners well-grounded on implementing the 21st century skills which are proving to be elusive in Africa. The well-organized networking sessions culminated in paying a courtesy call to the Director General of Rwanda Education Board in the Ministry of Education, Rwanda. Prof. Orodho recommends that such staff exchange initiatives should be upscaled.
Dr. Salome Muriuki, of the department of Environmental Sciences has been selected for the prestigious Commonwealth Professional Development Fellowship programme as a visiting professional fellow, tenable at Lancaster Environment Center, Lancaster University, United Kingdom. The Commonwealth Professional Development Fellowship is a prestigious award targeting talented and motivated professionals globally who have the potential to make change.

The aim of this fellowship is to help build and enrich knowledge, skills and practices needed in addressing local and global environmental challenges, and for the achievement of the Sustainable Development Goals (SDGs), under the theme Access, Inclusion and Opportunity. Dr. Muriuki will be work towards enhancing her skills in building strategic partnerships between Academia, Industry, Corporates, Civil and Research organizations. This will be instrumental back home in understanding market/research needs and in partnering with Industry and Corporates in preparing graduates that are relevant, highly qualified and fit for the job market.

Ultimately, in the mid and long-term, the fellowship will culminate in Collaborative work between Kenyatta University and Lancaster University, in co-developing and implementing research proposals and consultancies, incorporating new knowledge dimensions in environmental management. This will greatly enhance the quality of my research and teaching, which will highly impact on the quality of our graduates, community outreach and the achievement of the sustainable development goals. Particular themes of research include; circular economy, eco-innovation, low-carbon technologies and sustainability.
Dr. Florence N. Okwara

KU don awarded fellowship training in pediatric neurodevelopment

Dr. Florence N. Okwara of the Department of Paediatrics and Child Health was awarded a scholarship to train in paediatric neurodevelopment for 2 years from 1st July 2018. She holds a Masters of Medicine in paediatrics, and a PhD in Public health. The fellowship training is under the University of Cape Town (UCT), South Africa and will be based at Red Cross War Memorial Children’s Hospital, in Cape Town. The hospital has a vibrant child development department dedicated to caring for multisystemic disorders and developmental conditions from primary to quaternary level needs. This department is also directed towards building and expanding capacity to manage neglected diseases of poverty from vulnerable populations. This is largest center in Southern Africa with a dedicated child development/ pediatric neurodevelopment training post. Upon successful completion, Dr. Okwara will be one of the few pediatric neuro-developmentalists on the continent. Upon her return, she is expected to implement child development services at her home institution, for early diagnosis and interventions of these conditions.

She is expected to improve the training of health workers in the field and to help in setting up pediatric rehabilitation services in the country. She looks forward to working with other stakeholders and partners in the field to advocate for preventive measures, improved health care delivery to address the glaring health care disparities faced by these children, and lobby for better learning opportunities for children with neurodevelopmental disabilities through linkage with special education services. She also hopes to initiate multidisciplinary and collaborative research projects in the field.
STUDENTS CORNER
As a PhD student (Nutrition and Dietetics) at Kenyatta University, I attended the first ever PhD students support program in Africa. The program which was meant to help PhD students across Africa navigate through their PhD journey was held at the Centre of Excellence for Nutrition (CEN) at the North-West University (NWU), Potchefstroom, South Africa between 25th March and 12th April 2019. The training gave me new insights, motivation and an in-depth understanding of the ABCD of a PhD. I must say that the program equipped me immensely with the necessary skills both in my PhD and career journey to conduct top tier research. The training covered areas such as; me and my supervisor, theory of coping skills, protocol writing, study designs, good clinical practice, ethics and etiquette in research, biomarkers, basic of modeling in nutritional epidemiology, statistical analysis, scientific writing and publications, presentation skills, leadership in nutrition among others.

The program also provided me an excellent opportunity to interact with my fellow scholars across Africa and with some of the best minds globally in the field of nutrition and dietetics. Further, the forum also acted as a strategic think tank to enhance my general wellbeing.

I would like to thank my supervisor Prof. Judith Kimiywe, Prof. Fré Pepping, Prof. Marius Smuts, Prof. Edelweiss Wentzel-Viljoen and Dr. Robin Dolman and all others who made this informative and memorable experience possible. ASANTE
On the 25th of March 2019, I arrived in Potchefstroom, South Africa to attend a 3-week PhD support program. The 3-week PhD course is an extension of a co-operation between the Centre of Excellence for Nutrition (CEN) the North-West University (NWU), Potchefstroom, South Africa and the Department of Nutrition and Dietetics, University of Ghana (UOG), Accra, Ghana. The course receives financial support from the Nutricia Research Foundation (NRF, The Netherlands) referred to as the CEN-UOG-NRF network.

The aim of the program is to improve the skills in planning and executing research projects as well as general life skills such as how to cope with specific stresses that a PhD brings. The program sessions were facilitated by accomplished researchers and academicians that brought a vast array of experience and skills. The training was attended by PhD students from nine Africa countries such as Kenya, Uganda, Malawi, Ethiopia, Ghana, Nigeria, Rwanda, South Africa and Zimbabwe. I indeed learnt a lot regarding the whole research process, but also enjoyed the opportunity to learn and hear about the experiences of the other participants. When I started on the 25 March 2019, we were participants and facilitators but when I left on the 19 April 2019, we were friends that shared a unified goal of improving the nutrition situation of Africa by conducting quality research, and we finally found out that the ABCD of a PhD means A (Apply) B (Butt) to C (Chair) D (Daily). I am appreciative of the entire team at Centre of Excellence for Nutrition CEN at NWU for having given me the opportunity to attend this life changing program but also very grateful to Prof. Judith Kimiywe for recommending me for the program.

Ndahura Nicholas Bari
PhD student
Department of Food Nutrition and Dietetics
Kenyatta University
I attended the European Diploma in Adapted Physical Activities (EUDAPA) 2019 on the support of the KENFIN-EDURA project which is a collaboration between Kenyatta University (KEN), University of Helsinki (FIN) and Haaga-Helia University of Applied Sciences (FIN). The project focuses on building capacity in higher education and research to address the transition in physical activity and dietary habits. One of the areas supported by the project is student and staff exchange. I attended the programme as a member of staff and PhD student at Kenyatta University. My research and practice specialization is disability sports.

EUDAPA is a 3 months international diploma course designed to give students international experience and skills in adapted physical activity. EUDAPA is hosted by the Experience and Economy Unit of Haaga-Helia’s Vierumäki campus.

To begin with, this is probably the longest I have been working with an international group. We had 7 nationalities among the EUDAPA students; Africa participated in EUDAPA for the first time. There were Finnish, Czech, Belgian, French, Spanish, Kenyan and Zimbabwean participants. In addition, we had even more nationalities among the visiting lecturers, thanks to Erasmus support. The international networks become very important for my professional and academic growth. I look forward to undertaking future collaborative research and consultations within these networks. In addition, the networks provide good grounds to benchmark against best international practice as one learns how colleagues are handling adapted physical activity (APA) in their home countries. Anyone aspiring to be a professional in APA should consider applying to participate in the EUDAPA programme.
Haaga-Helia is a great benchmark in regard to learning by doing. This pedagogical approach is well implemented in EUDAPA through various practical classes as well as projects. Running inclusive PA and sports program will require more than a theoretical foundation. It is important that students learn responsibility; they learn by doing it. As a teacher in APA in my country, we are seeking to use this pedagogical approach. By attending this course, I have gained more experience in this approach which will help us improve on our existing APA programs.

From Haaga-Helia, I also bring home experiences in terms of implementing different learning environments. Comparatively, my university produces sports and exercise scientists, sports and recreation managers and physical educators, whereas Haaga-Helia facilitates learners to experience three learning environments – sports products, sports for health, elite competition, and sports management.

EUDAPA 2019 was total fun in learning. There is no space for gloom as one undertakes various classes and projects. My highlights for the spring semester were the 1-week down-hill and cross-country skiing trip to Ruka, running a 2 day Special Olympics program, and the tour to the UK for wheelchair basketball and London marathon, and visiting the Paralympics UK organization. Given that these programs were student-planned there was a lot of room for groups to decide where learning can be happily experienced. Indeed for me, Vierumäki is a place I look forward to returning maybe in a different role or have students from my university come for the experience.

Being in Vierumäki has also enhanced the collaborations between my university and Haaga-Helia. I look forward to being a continuous collaboration between the two institutions. The hallmark for the collaboration would be exchange programs for students and staff from the institutions.

I register my gratitude with the leaders and the KENFIN-EDURA team, Kenyatta University fraternity and my hosts at Vierumäki. I am much better than I was. I stand a better APA practitioner, researcher and tutor.

Daniel Njenga
Department of Recreation and Sports Management
Global educational exchange in medicine and the health professions (GEMx®) is a service provided by the Educational Commission for Foreign Medical Graduates (ECFMG®). GEMx facilitates and promotes international exchange opportunities in medical education and the health professions by forming partnerships, enhancing exchange of knowledge, making elective accessible and affordable. Kenyatta University is a GEMx Partner, and thereby it sends and hosts students to and from other countries. We were selected and placed at the University of Zimbabwe College of Health Sciences for a 4-week period from 10th February to 13th March 2019. Under the GEMx-MEPI (Medical Education Partnership Initiative), an African regional network, partial financial support was provided for and it catered for transport, accommodation, meals and allowance.
The GEMx elective program provided a unique opportunity to learn and experience the healthcare system structure outside Kenya. The main objective of the elective was to get exposure on pharmacy practice in Zimbabwe, with the specific objectives as outlined below;

- Appreciate clinical pharmacy practice in Zimbabwe vis-a-vis Kenya
- Participate in ward rounds; oncology, pediatric and medical wards. Appreciate the role of a clinical pharmacist in a hospital setting.
- Exposure to community pharmacy practice
- Exposure to the roles of a research pharmacist
- Understand regulation of pharmacy practice in Zimbabwe
- Appreciate the public health policy in Zimbabwe
- Exposure to Industrial Pharmacy practice in Zimbabwe

The elective program provided exposure on health system structure in a different country, which was an eye-opening experience on the health status of African countries, health service delivery, healthcare financing, health leadership and governance, access to medicines and health technologies. Additionally we relished the opportunity to sample a different culture, the beautiful scenic sites we visited and the new connections made in Zimbabwe.

We are grateful to the Global Educational Exchange in Medicine and Health Professions (GEMx) for the opportunity to participate in elective exchange in Zimbabwe and sponsoring our travel and stay under the MEPI program. We would like to appreciate Ms. Nawagi, GEMx African Region Coordinator; Dr. Kahiga, GEMx coordinator at Kenyatta University, for streamlining the application process and travel to Zimbabwe, Mrs. Gandara, Electives Officer, for ensuring the good reception at University of Zimbabwe.
Kenyatta University keen on enhancing mobility

Kenyatta University selected as an African host university to train PhD scholars in material science

Kenyatta University joins a group of eleven top African universities from Sub-Saharan Africa (SSA) which have been identified to accelerate the creation of skilled and highly quality labor force to propel Africa’s socio-economic transformation. Four host universities were selected last year while an additional seven were selected this year through a highly competitive process. Each African Host University will train PhD scholars from SSA countries in one program from five thematic areas. This is through Partnership for skills in Applied Sciences, Engineering and Technology-Regional Scholarship Innovation Fund (PASET-RSIF) is a unique and far reaching initiative, driven by African governments which resulted from the recognition of the critical need to strengthen science and technology capability in SSA countries. Kenyatta University joins the league of eleven top African universities from Sub-Saharan Africa (SSA) selected to accelerate the creation of skilled and highly quality labor force to propel Africa’s socio-economic transformation.

Lined to socio-economic transformation PASET-RSIF is initially supporting research and development of innovation capacity in the following priority areas-ICT, including big data and artificial intelligence; Food security and agribusiness; Minerals, mining and material engineering; Energy including renewable; and Climate change. The current support is through PhD scholarships, the initiative objective is to train 10,000 scholars in the next decade. Additional support will be through research grants and innovations grants whose calls will be released early next year.

The PhD in Material Science is in the thematic area Minerals, Mining and Material Engineering and the program is hosted by Physics department in the School of Pure and Applied Sciences. The department has highly qualified staff trained in international universities all over the world and the material science research group has been actively engaged in research for over twenty five years in the following areas; Thin film technology for different applications; Modeling of various semi-conductor properties tailored for different applications; Polymer materials research with interest in biodegradable materials and Nanotechnology – interest in methods of synthesis and characterization of nanostructure materials for various applications in energy, agriculture, environmental management, health.
Kenyatta University is yet again competitively selected to host scholars from within the East African Community for the 2019/2020 academic year under the EAC Scholarship Programme which is an initiative by the East African Community (EAC), the Inter-University Council for East Africa (IUCEA) and German Development Bank-KFW. The project begun in 2018 when the EAC and IUCEA entered into a memorandum of understanding (MoU) with KFW geared towards the training of students within the EAC region. This Project aims at creating future change agents, who identify themselves with the integration agenda of the EAC and are willing to share economic and development-oriented expert knowledge. The goal of this initiative is to contribute towards training leaders that will foster EAC regional integration, this will be partly achieved through the establishment of academic collaboration and an exchange programme between universities/institutions within the EAC region, by encouraging students to study in countries other than their own. In order to achieve these impacts, the project offers a comprehensive package including scholarships for masters programmes, internships, mentoring, networking events and further leadership training activities. The scholarship will support masters students in Mathematics, Engineering, Informatics, Science, Technology and Business Science programmes. The programme will include minimum 30 percent female students in order to support women’s participation and enhance gender equality.
Kenyatta University (KU) is one of the five consortium partners in the Intra-Africa ACADEMY project funded by the European Union. The ACADEMY project endeavours to contribute to the promotion of cross-regional continental integration, sustainable and inclusive development. The project also purposes to create an open platform as a key instrument for innovation, knowledge sharing and dissemination of good academic and governance practices within the participating institutions. The ACADEMY project is designed to provide resources and opportunities for student and staff mobility from four regions (North, West, South and East) of Africa, offering support for Masters, Doctoral and short research, teaching and administrative visits between the consortium partners.

Coordinated by the University of Tlemcen, Algeria, the other consortium institutions in the project are Kenyatta University (Kenya), University of Ibadan (Nigeria), University of Cape Coast (Ghana), and University of Kwa Zulu Natal (South Africa). In conjunction with two other associate partners, namely the Pan African University for Water and Energy Sciences and Ministere de L’enseignement Superior et de la Recherche Scientifique (Algeria), University of Porto in Portugal serves as the Technical partner.

The first call for applications was done in May 2018 for Masters and Doctoral programmes (Target Group 1) and Academic and Administrative staff (Target Group 2). After an intensive evaluation screening process, a total of 8 students were selected to be hosted at KU under the first cohort; these students are under Full Mobility sponsored scholarships. The second cohort are set to join in September 2019 and Kenyatta University will receive a total of 8 new students under Half Mobility (meaning they will study for a minimum of one semester to a maximum of two semesters).
Enhancing safety during your outdoor adventure
Mountains are home to a variety of tourist mountaineering activities which include hiking, camping, physical fitness programs, rock climbing, site seeing, among others. In the East African region, the most prominent outdoor and adventure activities take place in the Afro-Alpine mountain regions; Mt. Kenya, Rwenzori Mountains and Mt. Kilimanjaro; in Kenya, Uganda and Tanzania respectively. Mountaineering outdoor and adventure programs and activities are regarded high risks events that report numerous safety concerns, accidents, threats, hazards and vulnerabilities that result to numerous injuries, illnesses and fatalities. This calls for competency in emergency risk management and need for standardization of practices and protocols to save lives.

Through the Kenyatta University Vice Chancellor’s Grant, researchers from the Department of Physical Education, Exercise and Sports Science and the Department of Recreation and Sports Management investigated preparedness of practitioners in Wilderness Pre-Hospital Emergency Risk Management (PHERM) in the Afro-Alpine mountain regions of East Africa. The study focused on prevention, and controlling aspects and minimizing hazards in the outdoors; care given following injuries or illnesses in the outdoor practice and protocol followed in case of fatalities; adherence to set standards and guidelines on safety issues concerning various outdoor adventure activities.

Two stakeholders’ dissemination workshops were held in Narumoru and Nairobi to share findings with key decision makers and practitioners in the industry. Participants comprised of officials from KWS, KEBS, disciplined forces, Ministry of Tourism, Health, Interior and Coordination of National Government and Education, NGOs, outdoor adventure facilitators, instructors, teachers, program managers, porters and guides across the three afro-alpine mountains of East Africa.

The study aimed to inform the various sectors on the current scope and standards among the outdoor adventure practitioners which will guide upcoming training programs, retooling exercises and safety sensitization and training of personnel. The dissemination workshops initiated talks to spearhead policy formulation and documentation, formation and institutionalization of regulations, and co-ordination of standards on outdoor adventure practice.
Meeting the increasing food demands of the rapid growing population in the face of limited resources presents a big challenge to the agriculture sector in Sub-saharan Africa. Low soil fertility presents one of the major challenges to sustainable food production since most smallholder farmers cannot afford to invest in high cost chemical fertilizers. This challenge drove Dr. Ezekiel Mugendi for the Department of Biochemistry, Microbiology and Biotechnology together with a team of researchers, under the project titled ‘Exploiting Arbuscular Mycorrhizal Fungi - Rhizobia Legume Tripartite Symbiosis to increase Crop Production and Resilience in Semi-arid Tropics of Kenya’, to explore and developed the use of effective arbuscular mycorrhizal fungi (AMF) and rhizobia to improve and promote sustainable soil fertility. The general objective of the study was to improve rural livelihood by developing resilient cropping systems that provide sufficient and healthy food based on innovative soil amendments that incorporates beneficial oil microorganisms in semiarid tropics of Kenya.

The project was carried out in lower eastern Kenya areas farms in the semi-arid areas of Embu (Machang’a) and Kitui (Kitui West) where the temperatures are hot and dry and receives minimal amounts of rainfall. Cowpea and maize are among the key crops that are grown for food and cash generation. Based on this research an effective rhizobia inoculum for cowpea was developed and adapted to these semi-arid regions. This information was disseminated to farmers in Mbeere and Kitui who were trained on the specific nutritional needs of their farms. on the use of beneficial microbial inoculants that were found to increase cowpea growth and crop resilience.

In addition, two postgraduate students, one MSC and one PhD student have been supported under the project and are at various stages of their studies and have so far benefitted immensely from their inclusion in the project. Also, a book chapter in a book titled ‘Climate Impacts on Agricultural and Natural Sustainability in Africa’ has been accepted for publication by Springer Publishers.
Benefits of cultivating cowpea

1. Improves soil fertility by enhancing nitrogen fixation

2. Can be intercropped with other crops and can act as a security crop.


4. Generates high income and yields (3500kg/ha)

Dr. Mugendi (standing) engaging participating farmers
Effective dissemination of research outputs is greatly emphasized at Kenyatta University to ensure research achieves the desired impact on development and benefits society. In 2018/2019, the university participated in and supported the organization of several conferences and seminars in different departments and schools. These events have served as major platforms for sharing of research outputs and outcomes with key stakeholders in development, policy makers, funding organizations, among others within and outside Kenya’s borders. Conferences and seminars are important tools for networking, knowledge exchange and ideation points for future collaborative research. Highlights of selected conferences are here presented.
The significant increase in risks to food safety including food borne-illness is of major concern worldwide. To effectively address this menace, the Department of Food Nutrition and Dietetics, School of Public Health & Applied Human Science organized a conference under the theme: “Food and Nutrition Safety from farm to fork: a missing link in consumer health and food security”. The forum brought together scholars, food industry practitioners, regulatory bodies, and development agencies to share and evaluate evidence from research, to disseminate findings on threats and mitigation measures for food safety in relation to public health, food supply chain, policies, regulatory environment, production practices, among other topics.
The Department of Mathematics and Actuarial Science in the School of Pure and Applied Sciences organized a four-day conference to exchange ideas on applications of mathematics in natural and social sciences; promote regional and international collaborations between researchers; share strategies to enhance STEM uptake in high schools; provide mentorship to early career mathematicians; and provide a platform for researchers and educators in mathematics to address unique challenges in the discipline. The key speakers included Prof. Torsten Lindström and Prof. Roger Pettersson (Linnaeus University), Prof. Dankit Nassiuma (Africa International University), Prof. Sandle Motsa (University of Swaziland), Prof. Stanford Shateyi - Venda University (South Africa), Dr. Thomas Achia, Centre for Disease Control and Prevention, Mr. Stephen Njoroge (CEMASTEA) and Dr. Lucy Muthoni (Strathmore University).
Kenyatta University Vice Chancellor, Prof. Paul K. Wainaina, Mr. Mukhtar A. Ogle and participants of the International Mathematics Conference
KENYATTA UNIVERSITY
BIENNIAL RESEARCH AND INNOVATION CONFERENCE

THEME: RESEARCH AND INNOVATION FOR THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOALS AND KENYA’S BIG FOUR AGENDA

DATE: 22ND – 25TH OCTOBER, 2019
VENUE: KENYATTA UNIVERSITY (MAIN CAMPUS)

CALL FOR SUBMISSION OF ABSTRACTS, SYMPOSIA AND PAPERS

CONFERENCE SUB-THEMES
1) Food security and sustainable agriculture
2) Health and wellbeing
3) Transformative, inclusive and equitable quality education
4) Gender and development
5) Infrastructure development, energy and industrialization
6) Environment, natural resources, climate change and sustainability
7) National values, social cohesion, peace and development
8) Visual and performing arts, music, sports, hospitality, tourism and development

CROSS-CUTTING ISSUES
1) Partnership for impactful research and development
2) Innovation management, technology transfer and entrepreneurship

IMPORTANT DATES
31st July, 2019  Submission deadline for abstracts and symposia proposal
15th August, 2019 Notification of acceptance to successful authors
30th September, 2019 Deadline for early bird registration

CONFERENCE REGISTRATION FEES

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CONFERENCE FEES TO BE PAID BY BANKERS CHEQUE/DIRECT CASH DEPOSITS TO:
Bank: National Bank of Kenya Ltd (KU Branch) Name: Kenyatta University Research Grants Account
Account No.: 01021010781300 Swift Code: NBIKENKNXXX Branch Code: 12044

CONTACT DETAILS:
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Author guidelines for abstracts, papers and posters available at: www.ku.ac.ke/kubric

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Kenyatta University will hold a Biennial Research and Innovation Conference on 22nd – 25th October 2019 at the University Main Campus. The theme of the conference is ‘Research and Innovation for the Achievement of Sustainable Development Goals and Kenya’s Big Four Agenda’. Research and innovation provides a huge opportunity to tackle developmental challenges presented by the changing economy, technological developments, globalisation and societal dynamism. Kenya’s Big Four Agenda has provided universities, industry, research organizations and development partners with opportunities to re-examine their contributions towards realisation of their development priorities as well as international commitments for Africa’s growth and prosperity. The Big Four Agenda is in congruent with UN Sustainable Development Goals; Science, Technology and Innovation Strategy for Africa 2024; and the Kenya Vision 2030.

We acknowledge and appreciate the support granted by our long-term friends and partners and we are delighted to form new partnerships that will be instrumental in contributing to the country’s development agenda.
Kenyatta University Vice Chancellor Prof. Paul Wainaina, on the right, and KETRACO's CEO, Mr. Fernandes Barasa during the MOU signing in support of KUBRIC Conference at KUCC Interaction hall.
Dr. Catherine Muui, of the Department of Agricultural Science and Technology, assessing the sorghum genotypes being sampled at the school of Agriculture and Enterprise Development Greenhouse.